WHAT IS CLAIMED IS:

1. A method of root-canal photo-sterilizing, comprising:
forming an opening into the pulp chamber of a tooth;
removing the pulp from at least one infected root canal of said tooth;
cleaning the walls of said at least one root canal; and
photo-sterilizing said walls, by shining on them with light at a combination of wavelength and intensity operative to disinfect said walls.

2. The method of claim 1, wherein said photo-sterilizing said walls further comprises photo-sterilizing with a diffuser.

3. The method of claim 2, wherein said diffuser is formed of a light-transmitting shell and a fluid enclosed therein.

4. The method of claim 3, wherein said light-transmitting shell is flexible.

5. The method of claim 3, wherein said light-transmitting shell is formed of a polymer.

6. The method of claim 3, wherein said light-transmitting shell is formed of Cyclic Olefin Copolymers (COC).

7. The method of claim 3, wherein said light-transmitting shell is formed of COC 8007 Hi UV.

8. The method of claim 3, wherein said light-transmitting shell is between 0.1 and 0.3 mm thick.

9. The method of claim 3, wherein said light-transmitting shell is substantially 0.2 mm thick.

10. The method of claim 3, wherein said fluid is selected from the group consisting of air, water and oil.

11. The method of claim 3, wherein said shell is adapted to couple with an optical fiber by fitting around said optical fiber and gluing thereto.

12. The method of claim 3, wherein said shell is adapted to couple with an optical fiber by tightly fitting around said optical fiber, for a quick connection.

13. The method of claim 3, wherein said light-transmitting shell is formed of a material which changes color after exposure to UV light, thus indicating that the diffuser has been used and must be disposed.

14. The method of claim 13, wherein said material is a thermoplastic polyurethane (TPU).

15. The method of claim 3, wherein said shell comprises a diaphragm formed of a material which changes color after exposure to UV light, thus indicating that the diffuser has been used and must be disposed.

16. The method of claim 15, wherein said material is a thermoplastic polyurethane (TPU).

17. The method of claim 3, wherein a surface of said optical fiber, which forms contact with said fluid, is machined to form a lens, for improved light diffusion.

18. The method of claim 1, wherein said wavelength is between 150 and 300 nm.

19. The method of claim 1, wherein said wavelength is between 300 and 500 nm.

20. The method of claim 1, wherein said wavelength is between 500 and 700 nm.

21. The method of claim 1, wherein said wavelength is between 700 and 1000 nm.

22. The method of claim 1, wherein said wavelength is between 1000 and 2000 nm.

23. The method of claim 1, wherein said wavelength is between 2000 and 12000 nm.

24. The method of claim 1, wherein said light intensity on said walls of between 3 and 300 mJ/cm2.

25. The method of claim 1, wherein said light is laser light.

26. The method of claim 1, wherein said method further comprises filling and restoring said tooth.

27. A method of performing post-endodontic photo-sterilization of a root canal, comprising:

forming an opening into the pulp chamber of a tooth;

removing the pulp from at least one infected root canal of said tooth;

cleaning and shaping the walls of said at least one root canal;

filling said at least one root canal with a filling substance which comprises at least one light-transmitting element, in communication with said walls;

restoring said tooth; and

performing post-endodontic photo-sterilization of said root canal, by coupling a light source, at a combination of wavelength and intensity operative to disinfect said walls, with said at least one light-transmitting element.

28. The method of claim 27, wherein said wavelength is between 150 and 300 nm.

29. The method of claim 27, wherein said wavelength is between 300 and 500 nm.

30. The method of claim 27, wherein said wavelength is between 500 and 700 nm.

31. The method of claim 27, wherein said wavelength is between 700 and 1000 nm.

32. The method of claim 27, wherein said wavelength is between 1000 and 2000 nm.

33. The method of claim 27, wherein said wavelength is between 2000 and 12000 nm.

34. The method of claim 27, wherein said light intensity on said walls of between 3 and 300 mJ/cm2.

35. The method of claim 27, wherein said light is laser light.

36. The method of claim 27, wherein said at least one light-transmitting element comprises at least one diffuser and a light-transmitting sealer.

37. The method of claim 36, wherein said at least diffuser is formed of a material selected from the group consisting of silicone polymers, synthetic fused silica, quartz, poly-olefins, none-crystalline polyolefin, and a combination thereof.

38. The method of claim 36, wherein said at least one diffuser is formed of a light-transmitting shell and a fluid enclosed therein.

39. The method of claim 38, wherein said light-transmitting shell is flexible.

40. The method of claim 38, wherein said light-transmitting shell is formed of a polymer.

41. The method of claim 38, wherein said light-transmitting shell is formed of Cyclic Olefin Copolymers (COC).

42. The method of claim 38, wherein said light-transmitting shell is formed of COC 8007 Hi UV.

43. The method of claim 38, wherein said light-transmitting shell is between 0.1 and 0.3 mm thick.

44. The method of claim 38, wherein said light-transmitting shell is substantially 0.2 mm thick.

45. The method of claim 38, wherein said fluid is selected from the group consisting of air, water and oil.

46. The method of claim 38, wherein said shell is adapted to couple with an optical fiber by fitting around said optical fiber and gluing thereto.

47. The method of claim 38, wherein said shell is adapted to couple with an optical fiber by tightly fitting around said optical fiber, for a quick connection.

48. The method of claim 38, wherein a surface of said optical fiber, which forms contact with said fluid, is machined to form a lens, for improved light diffusion.

49. The method of claim 38, wherein said diffuser is sealed with a plug, for insertion into a root canal, and further wherein said diffuser may be unplugged by inserting a hyperdemic needle through said plug, and pressurizing said diffuser, thus

causing said plug to pop out, for performing said post-endodontic photo-sterilization of said root canal.

50. The method of claim 36, wherein said at least diffuser is designed with two branches.

51. The method of claim 36, wherein said at least diffuser is designed with three branches.

52. The method of claim 36, wherein said at least diffuser is designed with four branches.

53. The method of claim 36,wherein said diffuser is formed as a plurality of optical fibers of different lengths, held together with a light transmitting sealant.

54. The method of claim 36, wherein said light-transmitting sealer is formed as a mixture, comprising:

an adhesive, selected from the group consisting of silicone polymers, silica, silicate, and a combination thereof; and

a filler, selected from the group consisting of fumed silica, quartz particles, barium sulfate, ring-opening polymers, and a combination thereof,

wherein said mixture comprises between 2% and 50 % of said filler.

55. The method of claim 1, wherein said filling substance is incorporated with a post.

56. The method of claim 1, wherein said filling substance is operative as a post.

57. A substance, operative as a light-transmitting sealer in a tooth filling, formed as a mixture, comprising:

an adhesive, selected from the group consisting of silicone polymers, silica, silicate, and a combination thereof; and

a filler, selected from the group consisting of fumed silica, quartz particles, barium sulfate, ring-opening polymers, and a combination thereof,

wherein said mixture comprises between 2% and 50 % of said filler.

58. An endodontic diffuser, adapted in size and shape to be inserted into at least one root canal, for transmitting light by diffusion, for photo-sterilization of said root canal.

59. The endodontic diffuser of claim 58, formed of a material selected from the group consisting of silicone polymers, synthetic fused silica, quartz, poly-olefins, none-crystalline polyolefin, and a combination thereof.

60. The endodontic diffuser of claim 58, wherein said at least diffuser is formed of a light-transmitting shell and a fluid enclosed therein.

61. The endodontic diffuser of claim 60, wherein said light-transmitting shell is flexible.

62. The endodontic diffuser of claim 60, wherein said light-transmitting shell is formed of a polymer.

63. endodontic diffuser of claim 60, wherein said light-transmitting shell is formed of Cyclic Olefin Copolymers (COC).

64. The endodontic diffuser of claim 60, wherein said light-transmitting shell is formed of COC 8007 Hi UV.

65. The endodontic diffuser of claim 60, wherein said light-transmitting shell is between 0.1 and 0.3 mm thick.

66. The endodontic diffuser of claim 60, wherein said fluid is selected from the group consisting of air, water and oil.

67. The endodontic diffuser of claim 60, wherein said shell is adapted to couple with an optical fiber by fitting around said optical fiber and gluing thereto.

68. The endodontic diffuser of claim 60, wherein said shell is adapted to couple with an optical fiber by tightly fitting around said optical fiber, for a quick connection.

69. The endodontic diffuser of claim 60, wherein a surface of said optical fiber, which forms contact with said fluid, is machined to form a lens, for improved light diffusion.

70. The endodontic diffuser of claim 60, wherein said diffuser is sealed with a plug, for insertion into a root canal, and further wherein said diffuser may be unplugged by inserting a hyperdemic needle through said plug, and pressurizing said diffuser, thus causing said plug to pop out, for performing said post-endodontic photo-sterilization of said root canal.

71. The endodontic diffuser of claim 58, having a length of between 8 and 25 mm in length.

72. The endodontic diffuser of claim 58, shaped generally as a cylindrical cone, and having a proximal diameter with respect to a crown of said tooth of between 0.5 and 2.0 mm.

73. The endodontic diffuser of claim 58, comprising two branches.

74. The endodontic diffuser of claim 58, comprising three branches.

75. The endodontic diffuser of claim 58, comprising four branches.

76. The endodontic diffuser of claim 58, formed as a plurality of optical fibers of different lengths, held together with a light transmitting sealant.

77. The endodontic diffuser of claim 58, comprising a plurality of surface pits whose diameters increase along the length of said diffuser, from between about 0.03 and about 0.05 mm in diameter, at a proximal end, with respect to the crown of said tooth, to between about 0.08 and about 0.15 mm in diameter, at a distal end, for providing a generally even light intensity on said walls.

78. The endodontic diffuser of claim 58, comprising a plurality of surface channels whose widths increase along the length of said diffuser, from between about 0.10 and about 0.15 mm, at a proximal end, with respect to the crown of said tooth, to between about 0.20 and about 0.30 mm, at a distal end, for providing a generally even light intensity on said walls.

79. The endodontic diffuser of claim 58, comprising a light coupler.

80. The endodontic diffuser of claim 58, comprising an optical-grade surface at a proximal end with respect the crown of said tooth.

81. The endodontic diffuser of claim 80, comprising a removable cap, for protecting said optical-grade surface.

82. A ring-shaped diffuser, adapted in size and shape to be inserted at an interface between a restored crown and a dentine tissue of a tooth, for transmitting light by diffusion, for photo-sterilization of said interface.

83. The ring-shaped diffuser of claim 82, formed of a material selected from the group consisting of silicone polymers, synthetic fused silica, quartz, poly-olefins, none-crystalline polyolefin, and a combination thereof.

84. A method of performing photo-sterilization of an interface between a restored crown and a dentine tissue, comprising:

placing a light transmitting element at said interface; and

performing photo-sterilization of said interface, by coupling a light source, at a combination of wavelength and intensity operative to disinfect said interface, with said light transmitting element.

85. A metal support for endodontic, which defines a lumen, for inserting a light transmission element therein.

86. A hollow metal support for endodontic, adapted as a light coupler, for providing light coupling between an optical fiber and a light-transmitting element of a root canal filling substance.

87. A photo-sterilization kit, comprising:

a diffuser, having proximal and distal ends, with respect to a crown of a tooth, and adapted in size and shape for insertion into a root canal of said tooth; and

a light coupler, formed as a metal sleeve, attached to said diffuser at said distal end,

wherein said light coupler is further operative as a support for strengthening the root canal filling.

88. The photo-sterilization kit of claim 87, and further comprising a distal shield.

89. The photo-sterilization kit of claim 87, and further comprising separate adhesive and filler tubes.

90. The photo-sterilization kit of claim 87, and further comprising a premixed adhesive and filler tube.

91. The photo-sterilization kit of claim 87, and further comprising a plurality of diffusers.

92. The photo-sterilization kit of claim 87, and further comprising a plurality of diffusers of different shapes and sizes.

93. A method of identifying a perforation in a root canal dentine, comprising:

wounding a spiraling conductive wire around an element, adapted in size and shape to fit into a root canal;

inserting said an element into a root canal;

applying a voltage to said wire; and

measuring a current flow from said conductive wire to a gum tissue, external to said dentine.

94. The method of claim 93, wherein said element is a diffuser.

95. The method of claim 94, performed prior to performing endodontics.

96. The method of claim 94, wherein said element wound with a conductive wire is embedded in a root canal, and said method is performed periodically as a post-endodontic prophylactic measure.

97. A method for intracorporeal photo-sterilization of an internal wall of a catheter, comprising:

providing a catheter, which is intracorporeally inserted;

inserting into said catheter, an optical fiber, having proximal and distal ends with respect to an operator; and

shining a light through said optical fiber, while said inserting proceeds, said light being at a combination of wavelength and intensity operative to disinfect said internal wall of said catheter.

98. The method of claim 97, wherein said catheter is opaque to said light.

99. The method of claim 97, wherein said catheter is partially opaque to said light.

100. The method of claim 97, wherein said light is ultraviolet light.

101. The method of claim 97, wherein said wavelength is between 150 and 300 nm.

102. The method of claim 97, wherein said wavelength is between 300 and 500 nm.

103. The method of claim 97, wherein said wavelength is between 500 and 700 nm.

104. The method of claim 97, wherein said wavelength is between 700 and 1000 nm.

105. The method of claim 97, wherein said wavelength is between 1000 and 2000 nm.

106. The method of claim 97, wherein said wavelength is between 2000 and 12000 nm.

107. The method of claim 97, wherein said light intensity on said walls of between 3 and 300 mJ/cm2.

108. The method of claim 97, wherein said light is laser light.

109. The method of claim 97, wherein said photo-sterilizing comprises photo-sterilizing with a diffuser, said diffuser being coupled to said distal end of said optical fiber.

110. The method of claim 97, wherein said photo-sterilizing comprises photo-sterilizing with a diffuser, said diffuser being formed as a cone.

111. The method of claim 97, wherein said photo-sterilizing comprises photo-sterilizing with a diffuser, said diffuser being formed as a cylinder.

112. The method of claim 97, wherein said photo-sterilizing comprises photo-sterilizing with a diffuser, said diffuser being formed as a ball.

113. The method of claim 109, wherein said diffuser is formed of a silicate compound.

114. The method of claim 109, wherein said diffuser is formed of a silicone polymer.

115. The method of claim 109, wherein said diffuser is formed of a light-transmitting shell and a fluid enclosed therein.

116. The method of claim 115, wherein said light-transmitting shell is flexible.

117. The method of claim 115, wherein said light-transmitting shell is formed of a polymer.

118. The method of claim 115, wherein said light-transmitting shell is formed of Cyclic Olefin Copolymers (COC).

119. The method of claim 115, wherein said light-transmitting shell is formed of COC 8007 Hi UV.

120. The method of claim 115, wherein said light-transmitting shell is between 0.1 and 0.3 mm thick.

121. The method of claim 115, wherein said light-transmitting shell is substantially 0.106 mm thick.

122. The method of claim 115, wherein said fluid is selected from the group consisting of air, water and oil.

123. The method of claim 115, wherein said light-transmitting shell is adapted to couple with an optical fiber by fitting around said optical fiber and gluing thereto.

124. The method of claim 115, wherein said light-transmitting shell is adapted to couple with an optical fiber by tightly fitting around said optical fiber, for a quick connection.

125. The method of claim 115, wherein said light-transmitting shell is formed of a material which changes color after exposure to UV light, thus indicating that the diffuser has been used and must be disposed.

126. The method of claim 125, wherein said material is a thermoplastic polyurethane (TPU).

127. The method of claim 115, wherein said shell comprises a diaphragm formed of a material which changes color after exposure to UV light, thus indicating that the diffuser has been used and must be disposed.

128. The method of claim 127, wherein said material is a thermoplastic polyurethane (TPU).

129. The method of claim 115, wherein a surface of said optical fiber, which forms contact with said fluid, is machined to form a lens, for improved light diffusion.

130. A method for intracorporeal photo-sterilization of an internal wall of a catheter, comprising:

providing a catheter, which is intracorporeally inserted, and which has a diffuser incorporated in its walls; and

shining a light through said diffuser, said light being at a combination of wavelength and intensity operative to disinfect said internal wall of said catheter.

131. The method of claim 130, wherein said catheter is opaque to said light.

132. The method of claim 130, wherein said catheter is partially opaque to said light.

133. The method of claim 130, wherein said light is ultraviolet light.

134. The method of claim 130, wherein said wavelength is between 150 and 300 nm.

135. The method of claim 130, wherein said wavelength is between 300 and 500 nm.

136. The method of claim 130, wherein said wavelength is between 500 and 700 nm.

137. The method of claim 130, wherein said wavelength is between 700 and 1000 nm.

138. The method of claim 130, wherein said wavelength is between 1000 and 2000 nm.

139. The method of claim 130, wherein said wavelength is between 2000 and 12000 nm.

140. The method of claim 130, wherein said light intensity on said walls of between 3 and 300 mJ/cm2.

141. The method of claim 130, wherein said light is laser light.

142. The method of claim 130, wherein said photo-sterilizing comprises photo-sterilizing with a diffuser, said diffuser being coupled to said distal end of said optical fiber.